Approved For Releas

ZEISS

OPTICAL

INSTRUMENTS for Scientific and Technical Investigations

CARL ZEISS JENA

RESTRICTED

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

CZ 99-036a-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2



Illustrations are not strictly binding as to details. — Printing blocks of illustrations, as far as available, will be supplied gladly to authors of scientific publications. All rights reserved.

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED

CARL ZEISS JENA

Meeting the most exacting demands of science and industry

we offer:

Microscopes
Photomicrographic Outfits
Epidiascopes
Optical Instruments for
Measuring,
Indicating Recording
and Examining Purposes.

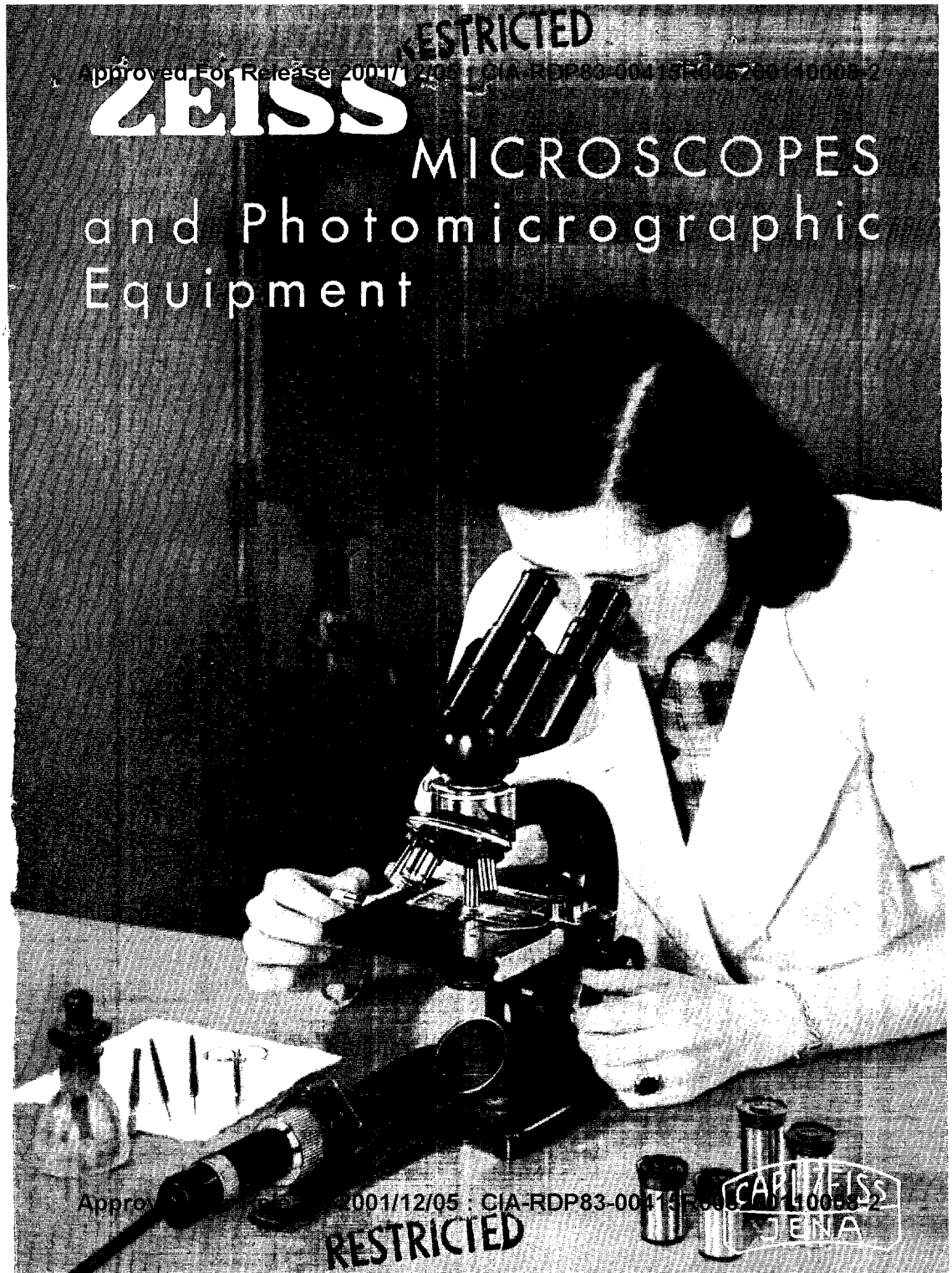
Unexcelled for performance and workmanship, practicability of design and elegance of outline. — The result of a century of experience and tradition.

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED

RESTRICTED
Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

ZEISS MICROSCOPES and Photomicrographic Equipment



Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2
RESTRICTED

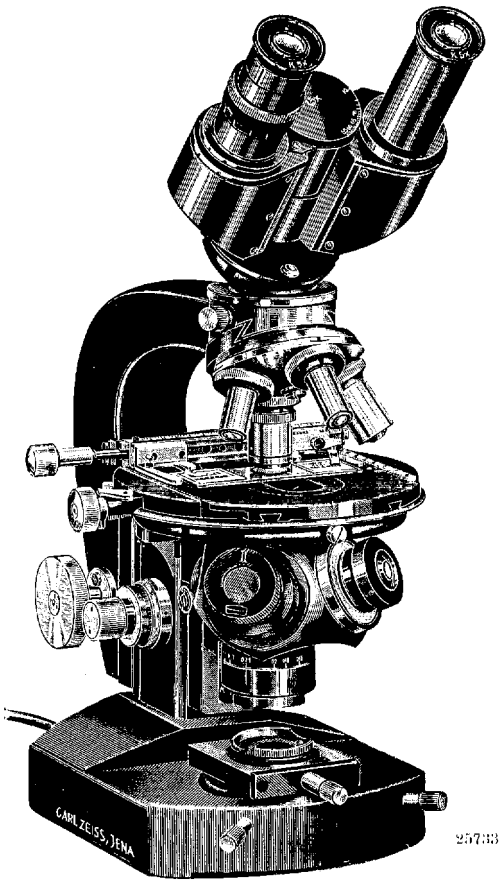
Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2
RESTRICTED

Large Research-Microscope "Lumipan"

with built-in illuminant

CARL ZEISS JENA

Fig. 1 (about 1/4 actual size)



25733

Stand Lp for comfortable inclined observation and with quick tube changing device, coarse and slow motions below stage level, Substage with pancratic condenser system (both with "T" — coated optics) for microscope objectives with apertures from 0.16 to 1.40, aplanatic condenser 1.4; Cardioid condenser for dark field illumination and condenser for low power objectives in a new type of triple condenser turret, large mechanical stage E (75 × 50 mm. movement); in cabinet with lock and key (not including electrical accessories, cf. p. 10).

Monocular inclined tube L
Binocular inclined tube attachment "Bitukni L" with coated optics, primary magnification × 1.5
Quadruple nosepiece on slide
Apochromats 10/0.30 and 20/0.65
Apochromat 60/1.00 with iris diaphragm, homogeneous oil immersion (also for dark ground work)
Apochromat 90/1.30, homogeneous oil immersion
Compensating paired eyepieces ×5, ×7 and × 10
Compensating eyepiece ×15

Microscope LpE "Lumipan" equipped as above for magnifications from ×50 to ×1350

Order number	Code word
30 00 40	*Ksihf*

Microscope LpG "Lumipan", same as above *(Ksihf)*, but with square mechanical stage "G" 75 × 50 mm. range of movement . . .

Order number	Code word
30 00 41	*Kycju*

For further details cf. "CZ 30 126 a"

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2
RESTRICTED

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Large Universal Research Microscope Lu Wd E

with vertically adjustable stage

CARL ZEISS JENA

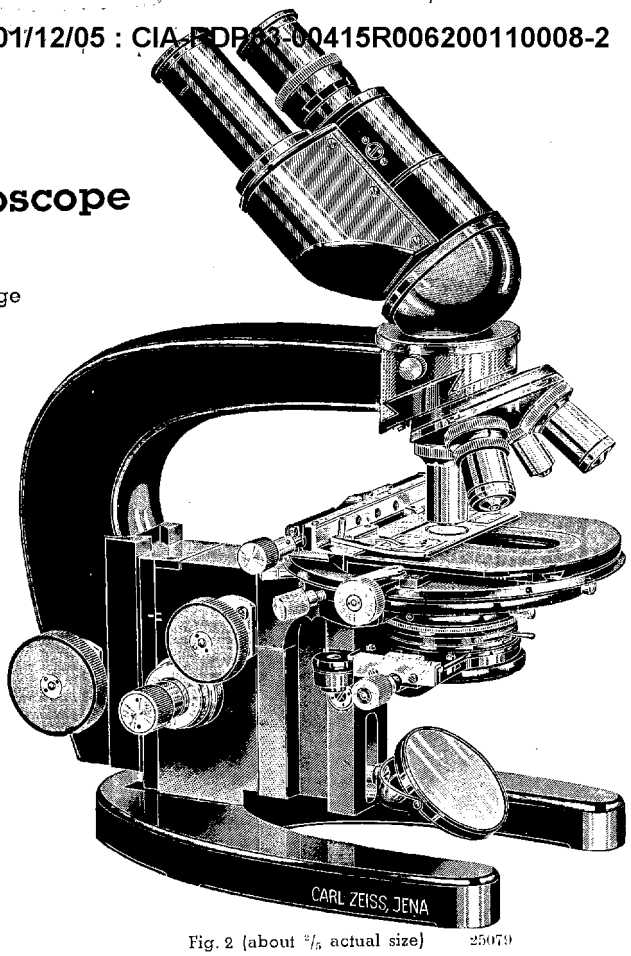


Fig. 2 (about $^{2}/_{5}$ actual size) 25079

Stand Lu for comfortable inclined observation and with quick tube changing device, coarse and fine motions below stage level, interchangeable Abbe substage Wd with diaphragm carrier and laterally adjustable and rotatable iris diaphragm, interchangeable stage carrier with large mechanical stage E (75 × 50 mm. movement) for vertical adjustment, in cabinet with lock and key.

Binocular inclined tube L with coated optics, primary magnification × 1.5
Condensor 1.2
Quadruple nosepiece on slide
Achromats 8/0.20 and 20/0.40
Achromat 40/0.65

Achromat 90/1.25 homogeneous oil immersion with iris diaphragm (also for darkfield observation)
2 Huygens eyepieces × 5
2 Huygens eyepieces × 7
2 Huygens eyepieces × 10

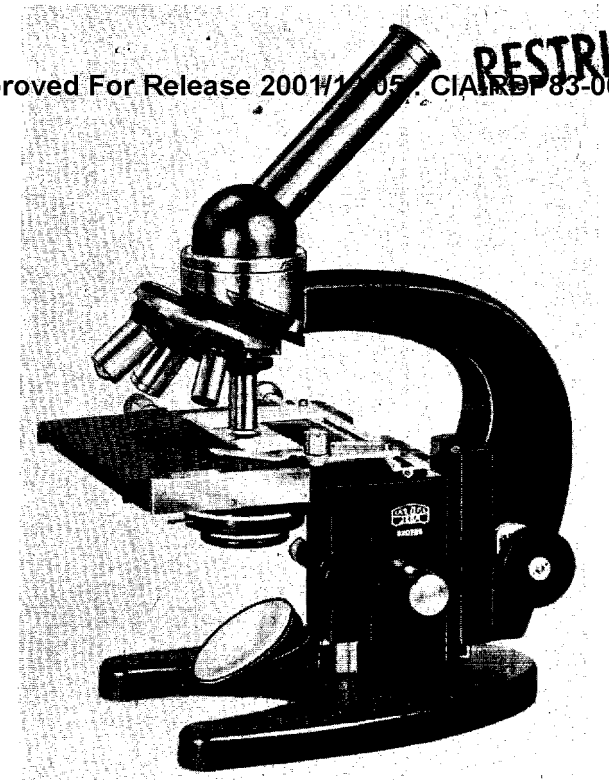
Binocular Universal Microscope Lu Wd E equipped as above for magnifications ×60 to ×1350
Binocular Universal Microscope Lu Wd G, as (Kyaer) but with square stage "G"
For monocular observation:
Monocular inclined tube L
Compensating eyepiece x15

Order number	Code word
30 00 32	*Kyaer*
30 00 33	*Kyafs*
30 50 01	*Knywa*
30 31 23	*Konap*

Thanks to the vertical adjustability of the stage stand Lu, if complemented with an Epi-condensor, may be used with advantage for observations by incident light. Please apply for particulars.

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2
RESTRICTED



Monocular General Purpose and Diagnostic Microscope Lg OG

CARL ZEISS JENA

Fig. 3 (about $^2/_5$ actual sieze)

300045

Stand Lg for comfortable inclined observation and with quick tube changing device, coarse and fine motions below stage level, rack and pinion adjustable substage O, square mechanical stage G, in cabinet with lock and key.

Monocular inclined tube L
Condenser 1.2 with iris and filter holder
Quadruple nosepiece on slide
Achromats 8/0.20 and 40/0.65
Achromat 90/1.25, homogeneous oil immersion[1]
Huygenian eyepieces × 7 and × 10
Compensating eyepiece × 15

Microscope Lg OG equipped as above for magnifications from × 56 to × 1350

Microscope Lg OE, same as above (*Kyaob*) but with large mechanical stage E (Fig. 1) in place of square mechanical stage G

Microscope Lg OB, same as above (*Kyaob*) but with simplified rotable mechanical stage B (cf. Fig. 4)

Supplementary Equipment:

Binocular tube attachment "Bitukni L", with coated optics primary magnification × 1.5 (requiring one more Huygenian eyepiece each × 7 and × 10)

Simplified attachable stage in case (for Lg OB)

Cardioid dark field Condenser 1.05 with centring device, in case

For microscope lamp cf. p. 10

[1] For dark-ground work the achromatic objective 90/1.25 (homogeneous oil immersion) is supplied **with** iris diaphragm

Order number	Code word
30 00 18	*Kyaob*
30 00 17	*Kybdo*
30 00 16	*Kybal*
30 50 00	*Knyyc*
30 51 10	*Kudty*
30 43 10	*Kovuc*
	additional codeword
—	*Kybep*

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2
RESTRICTED

RESTRICTED
Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

CARL ZEISS JENA

"Standard" Vertical Camera

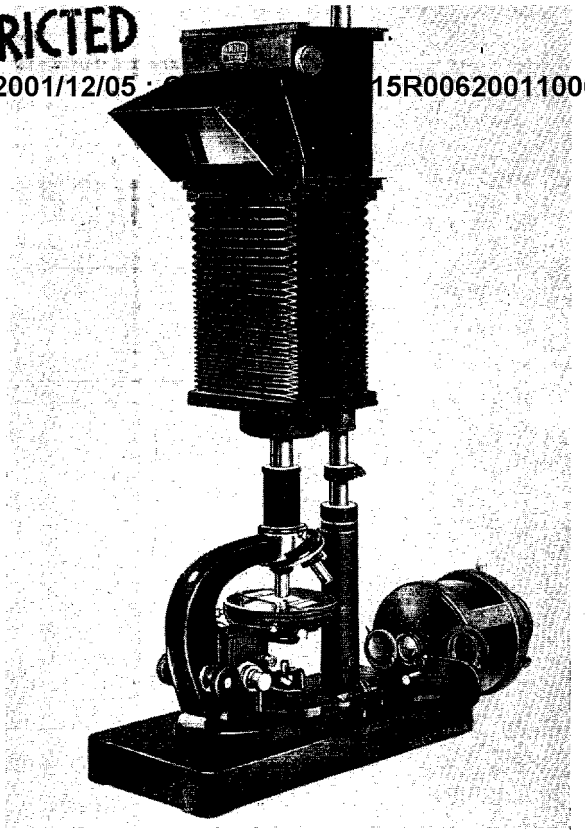


Fig. 4 (about 1/6 actual size)

300025

Simple and rapid operation, remarkable versatility and maximum performance in the various fields of photomicro- and macrography are the salient features of this apparatus. By detaching the camera from the microscope the operator is in a position of employing any type of microscope available for photomicrographic purposes and to complement his outfit according to requirements.

Vertical Camera "Standard 9 x 12" with illuminating device; consisting of base plate with column; extensible swing-out camera; 2 metal plate holders, one each frosted and clear glass screen; light-protecting sleeve; lamp housing and holder for filter 32 mm. ∅; shutter and an additional filter holder; light-tight connecting sleeve; focusing magnifier × 6; protective filter (neutral glass), and reflector attachment (not including microscope and electrical accessories).

	Order number	Code word
	30 60 60	*Kwiya*
Accessories:		
Trichrome filter (1 yellow glass and 1 blue glass 32 mm. ∅)	30 46 45	*Pjang*
For macro work:		
Focusing mount for objectives with iris diaphragm for screw-on attachment to front panel of camera	30 86 40	*Penaa*
Tessar 1:4.5 f = 13.5 cm. with coated optics, in special mount	54 06 01	*Kwohl*
Electrical accessories:		
Projector bulb 12 V. 100 W.	2544 ZN 54	*Pekru*
Transformer with cable for 220 V. a. c.	05 85 30	*Pekxa*

For further details cf." CZ 30-615 a"

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2
RESTRICTED

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2
RESTRICTED

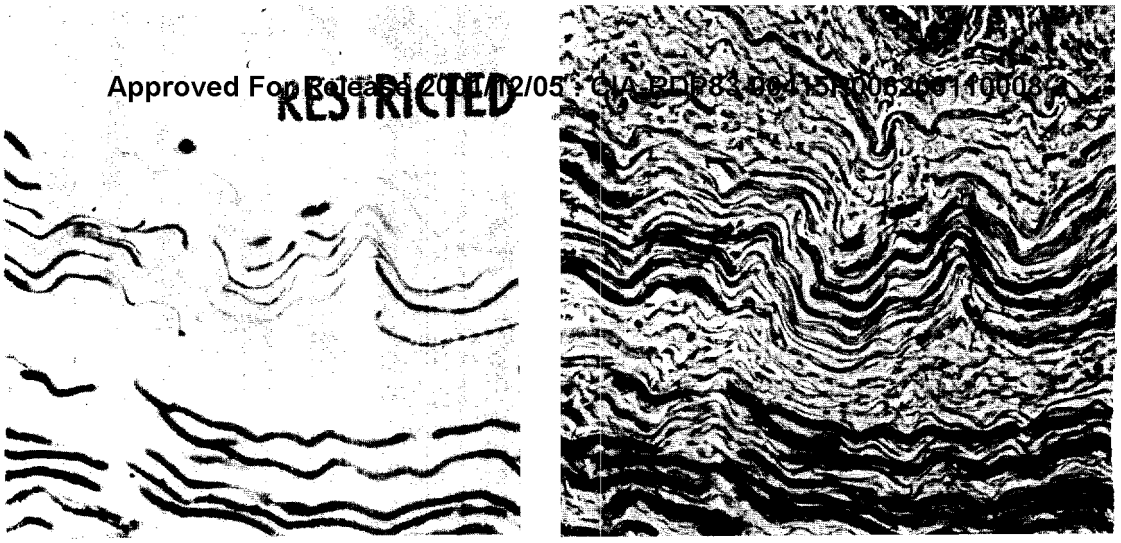


Fig. 5 300019 300020

Longitudinal section of Human Peripheral Nerve (in connective tissue degeneration).
Left: bright field Right: phase contrast

New possibilities of observation in microscopy by means of the

Zeiss-Phase Contrast Method

The new phase contrast method after Zernike offers valuable assistance to science in general and to biological, bacteriological and diagnostic research in particular in that it permits the observation of biological processes which were not demonstrable heretofore. This applies especially to unstained living microscopic objects which can now be observed and photographed with a distinctness unobtainable in the past. The special type of objectives designed for phase contrast equipment are also available for the conventional microscopic observation of stained specimens in bright and dark ground illumination.

	Order number	Code word
Components:		
Achromatic Objective Ph 10/0.30	30 20 83	*Kusuk*
Achromatic Objective Ph 20/0.40	30 20 80	*Kusyo*
Achromatic Objective Ph 40/0.65	30 20 81	*Kutap*
Achromatic Objective Ph 90/1.25 (homog. oil immersion)	30 20 82	*Kutau*
Yellow/Green Filter	30 46 26	*Pjapi*
Phase condensor with auxiliary microscope in case (for the conventional types of microscopes)	30 43 40	*Kutoe*
Annular diaphragm in mount and auxiliary microscope (for "Lumipan")	30 40 27	*Kutka*
Complete Equipment:		
Phase Contrast Equipment for the conventional types of microscopes *) Consisting of: Phase condenser with auxiliary microscope, Yellow/Green Filter and four Phase contrast objectives (as above)	30 43 41	*Kycoz*
Phase Contrast Equipment for "Lumipan" Microscope Consisting of: Annular diaphragm in mount and auxiliary microscope, Yellow/Green Filter and four Phase contrast objectives (as above)	30 43 42	*Kycpa*

*) The phase contrast equipment ist adaptable to any make of microscope provided the diameter of the condenser sliding sleeve is not smaller than 36.8 mm. and that there is sufficient space for the revolving disc of the phase condenser (diameter 96 mm.).

For further details cf. "CZ 30-304 a".

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2
RESTRICTED

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

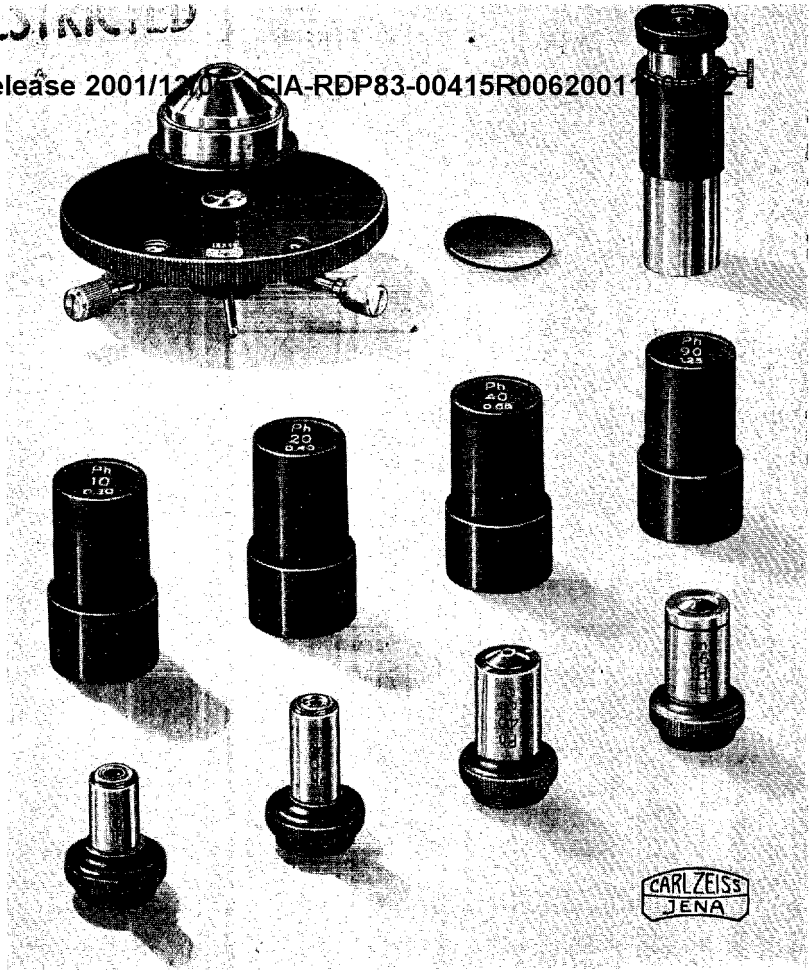


Fig. 6 300008

Components of Zeiss Phase Contrast Equipment

Top: Phase condenser, Yellow/Green filter and auxiliary microscope

Middle: Containers for objectives

Bottom: Achromatic Phase objectives

CARL ZEISS
JENA

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED
Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Microscope lamps

for bright and dark ground observations and for photomicrography; consisting of two-component collector with iris diaphragm and blue glass filter; guide tube for lamp cap with bayonet socket for bulb; 6 V. 15 W. bulb including cable and plug (not including filament lamp):

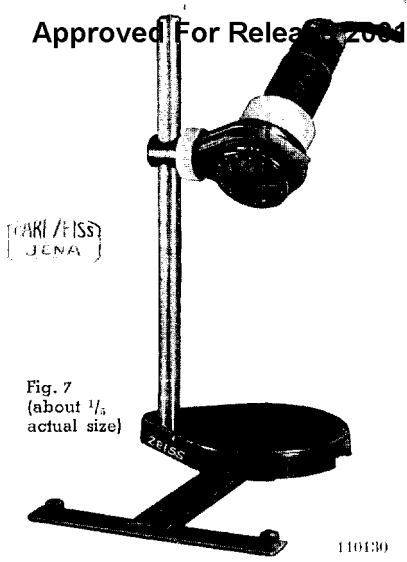


Fig. 7 (about 1/5 actual size)

110130

	Order number	Code word
Microscope lamp A: on connecting bar	30 42 00	*Kymuu*
Microscope lamp B: on vertical column, adjustable in height and inclinable, on pear-shaped base with connecting bar (Fig. 7)	30 42 01	*Kwyak*
Neutral glass	30 46 87	*Kyaco*
Electrical accessories (required also for "Lumipan" [page 4])		
Filament lamp 6 V. 15 W. with clear glass bulb	2613 ZN 54	*Kwoim*
Filament lamp 6 V. 15 W. with satin-frosted calotte (for photomicrography)	2613 ZN 54 ksm	*Kwoko*
220 V. a. c. transformer with flex and plug	05 85 26	*Kwons*
Microscope lamp C: for bright field illumination only, mounted on oval base, with inclinable housing, including cable and plug, operatable on service mains (not including accessories), cf. Fig. 8	30 42 02	*Kybiu*
Accessories:		
Tubular bulb 110 V. 25 W.	1211 ZN 54	*Kyboa*
Tubular bulb 220 V. 25 W.	1216 ZN 54	*Kybmy*
Blue glass screen	30 46 85	*Kiwab*
Connecting bar to microscope	30 42 32	*Kiwde*

For further details cf. "CZ 30-350a".

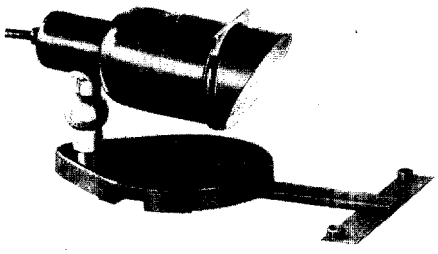


Fig. 8 (about 1/5 actual size) 300021

Polarizing filters

for insertion into the diaphragm carrier and filter holder of illuminants or condensers, or into the eyepiece cap. Their simple manipulation in conjunction with compensators make them excellently available for investigations in polarized light.



23351

Fig. 9 (about 2/3 actual size)



23221 b

Fig. 10 (about 2/3 actual size)

	Order number	Code word
Filter polarizer (Fig. 9)	30 59 00	*Kimoz*
Filter analyser (Fig. 10)	30 59 10	*Kimpa*
Compensators in metal mount with handle		
Compensating plate selenite red I	30 59 70	*Kimue*
Compensating plate 1/4 λ	30 59 76	*Kinku*
Indispensable if used on "L"-type stands:		
Straight monocular tube L	30 50 04	*Kobac*

For further details cf. "CZ 30-350".

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2
RESTRICTED

Objectives for microscopes

Systems	Notation: Primary magnification	Notation: Numerical aperture	Focal length mm.	Free working distance mm.	Order number	Code word
Achromatic objectives						
"Dry" series	**3**		36	29	30 20 02	*Kohfb*
	8	0.20	18	9	30 20 05	*Kohok*
	20	0.40	8.3	1.6	30 20 07	*Kohrm*
	40	0.65	4.4	0.55	30 20 08	*Kohto*
Homogeneous oil immersions	**90**	1.25	2.0	0.11	30 20 14	*Koini*
	90 *) with iris diaphragm	1.25	2.0	0.16	30 20 15	*Koitn*
Apochromatic objectives (for use only with compensating eyepieces)						
"Dry" series	**10**	0.30	16.2	5	30 20 51	*Kogun*
	20	0.65	8.3	0.7	30 20 52	*Kogvo*
Homogeneous oil immersions	**60** *) with iris diaphragm	1.00	2.9	0.22	30 20 57	*Kokha*
	90	1.30	2	0.11	30 20 60	*Kokoh*

*) Special objectives for dark ground observation which are also available for bright field work.

Eyepieces for microscopes Diameter of mount 23.2 mm.

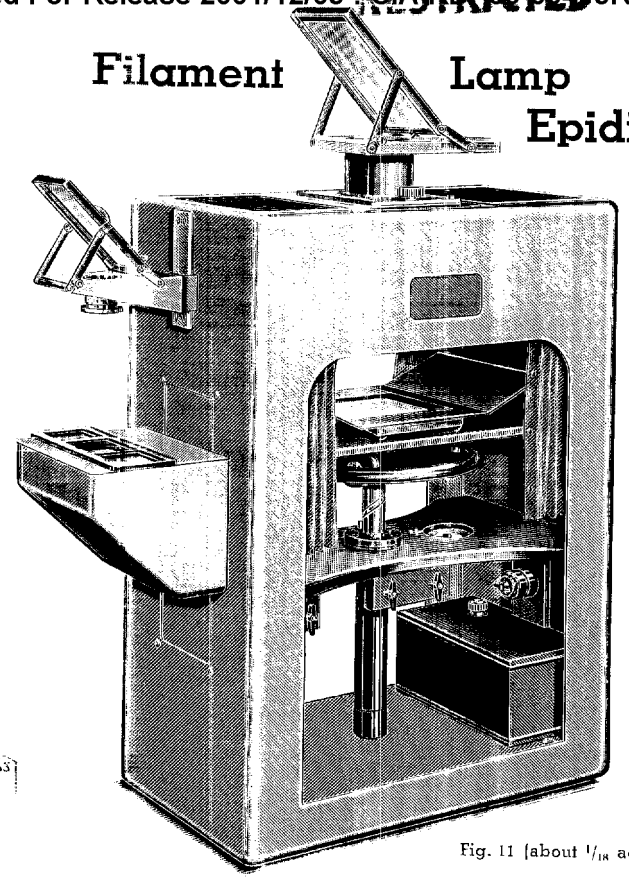
Notation and Factorial Magnification	Focal length mm.	Field of view number	Order number	Code word
Huygenian eyepieces (for achromatic objectives of low and medium power)				
× **5**	50	23	30 31 01	*Komdu*
× **7**	36	18	30 31 02	*Komev*
×**10**	25	14	30 31 03	*Knurz*
Orthoscopic eyepieces (for achromatic objectives of low and medium power)				
×**12,5**	20	16	30 31 10	*Komiz*
×**17**	15	13	30 31 11	*Komja*
Compensating eyepieces (for all apochromatic and fluorite systems and for high power achromatic objectives)				
K× **5**	50	23	30 31 20	*Komsi*
K× **7**	36	18	30 31 21	*Komuk*
K×**10**	25	13	30 31 22	*Komyo*
K×**15**	17	11	30 31 23	*Konap*
K×**20**	12.5	8	30 31 24	*Konbr*
Micrometer eyepieces				
Adjustable eyepiece H×7 (without micrometer)			30 31 05	*Kozei*
Adjustable eyepiece O×17 (without micrometer)			30 31 14	*Kozim*
Eyepiece micrometer, 10 mm. divided into 100 parts (tenths)			30 57 11	*Kraej*
Object micrometer, 1 mm. divided into 100 parts			30 57 20	*Krams*

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2
RESTRICTED

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED

Filament Lamp Epidiascope



300003

Fig. 11 (about 1/18 actual size)

The Filament Lamp Epidiascope provides an exceptionally bright and uniform illumination on the screen and projects objects of the most diverse character with striking distinctness. Equipped with high-aperture Epiotar objectives and a special type of illuminating mirrors, it operates on two 1000 Watt filament lamps and produces screen images of a most excellent luminous density. Glass filters of great heat-absorbing capacity ensure uninterrupted service and dispense with the noise of ventilator cooling systems. A convenient dimming switch eliminates irritating glare when inserting the objects. The Epidiascope can be conveniently operated from either side.

Additional features deserving emphasis are the pleasing design of the metal housing which moves on concealed rubber casters, and the small floor-space requirements (90 × 52 cm. = 35 ½" × 20 ½").

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED

The Diascope projection arrangement fitted with a 500 W. bulb is permanently attached to the Epidiascope.

The Epidiascope is arranged for 220 V. alternating current, a built-in transformer permitting the use of 110-V. lamps which are known to yield the greatest illuminating effect.

Technical Details

Episcopic Projection: Object stage 58 × 44 cm. ($22^3/_4$" × $17^1/_4$") with 20 × 20 cm. field stop and convenient hand wheel control for the elevating pillar; dimming device with mercury switch; illuminating system in the upper part of the housing containing two 1000 Watt projection filament lamps in adjustable lampholders with large aspherical illuminating mirrors and heat-absorbing glass filters.

The top of the instrument houses the fine adjustment for the projection system; the hinged erecting mirror in dust-proof mount, and an adjusting screw controlling the inclination of the mirror.

Diascopic Projection: Illuminating system with 500-Watt projector bulb in special lampholder; two-component condenser; heat-absorbing glass filter; deflecting mirror; field lens on a level with the object stage and lantern slide changer in horizontal arrangement; lens carrier and surface-silvered erecting mirror, in dust-proof mount, with adjusting screw controlling the inclination of the mirror which latter is hinged to shut down into its mount.

	Order number	Code word
Filament Lamp Epidiascope for projecting distances of from 4.5 to 6.5 m. with Epiotar lens 1 : 3.5 f = 43 cm. for episcopic work and Epiotar lens 1 : 4.5 f = 21 cm. for diascopic work including three lantern slide carriers each 8 ½ × 10, 8 ½ × 8 ½ and 9 × 12 cm. including built-in transformer with cable for 220 V. a. c. (not including bulbs)	58 52 13	*Kyaly*
Projector bulb 110 V. 1000 W. (of which two will be required)	2591 ZN 54	*Phdan*
Projector bulb 110 V. 500 W. with special lampholder	2411 ZN 54	*Paucs*

Please ask for special quotation if the above voltage and kind of current should not be available.

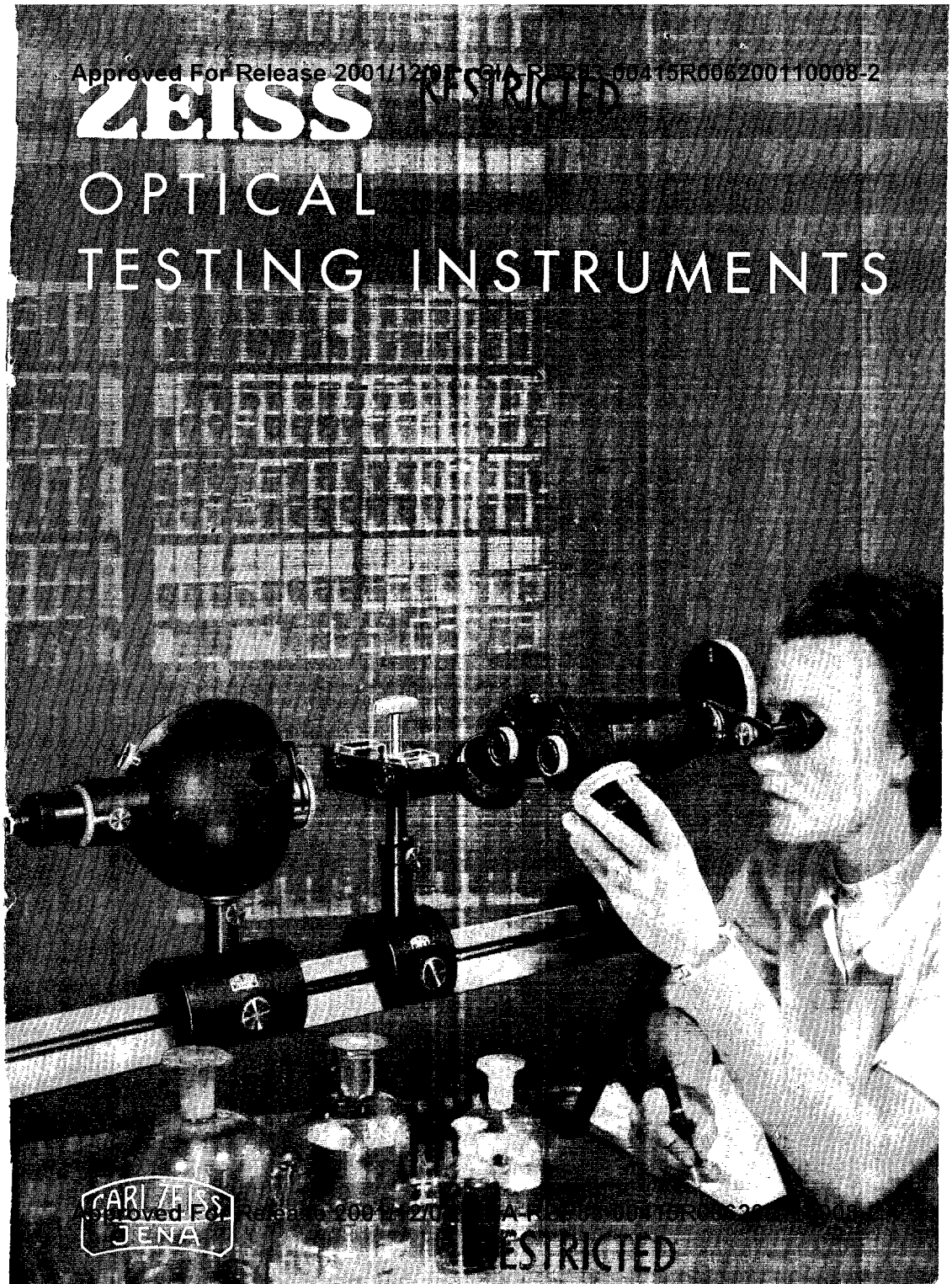
Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED

ZEISS

OPTICAL TESTING INSTRUMENTS



CARL ZEISS JENA

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED

In optical measuring instruments the physical laws of the manifold phenomena of light are utilized to meet the varied requirements of Science, Engineering and Industry.
Optical methods of measurement are characterised by:

Narrow limits of error
Rapidity of procedure
Minimum consumption of substance
Cleanliness and convenience

The properties of the substances under investigation are defined by:

Refractive indices (n_D)
Dispersion of colours
Spectral emission and absorption
State of polarization
Fluorescence
Extinction
Brightness and transmission in general

Zeiss instruments have been material in promoting scientific research and industrial development. They are indispensable where demands are most exacting.

CARL ZEISS
JENA

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED

CARL ZEISS JENA

Abbe Refractometer

(Model G)



Fig. 12 (about 1/4 actual size)

410148

This instrument—which is known as the classical type of Abbe Refractometer—has been re-designed with the aim of adapting it to modern requirements. While fully preserving the Abbe principle of measurement the instrument has been given a more compact form besides imparting to it improvements affording the following advantages:

Easier and consequently greater reading accuracy
Dust-proof housing and full protection of measuring scale
Handy location of motion control ensuring more convenient setting of the critical line.

The Abbe Refractometer measures all kinds of solutions, fats and oils, including solid and plastic substances used in

Chemical and Physico-chemical Institutes,
Food Control Laboratories
Industrial Laboratories

Measuring range: Refractive index $n_D = 1.3$ to $n_D = 1.7$
Percentage of dry solids 0 to 85 %
Tolerance: Refractive index $\pm$ 1 to 2 units of the 4th decimal
Percentage of dry solids $\pm$ 0.1 to 0.2 %

Abbe Refractometer, Model G
incl. thermometer 0—75 ° C., in wooden container

Apply for particulars

Order number	Code word
32 00 04	*Ukumi*

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED

Dipping Refractometer

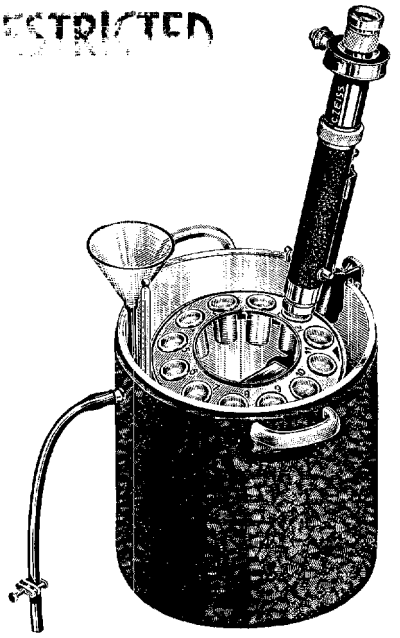


Fig. 13
(about 1/8 actual size)

16916

This instrument is used in testing the purity and determining the concentration of acids, bases, salts, alkaloids, foodstuffs as well as the proportion of albumen.

Despite its utter simplicity in manipulation the Dipping Refractometer is known to furnish the most accurate readings of all refractometers and, as a consequence, enjoys an excellent reputation in the various provinces of medicine, chemistry and engineering.

Measuring range: When using 10 interchangeable prisms, n_D 1.32539 to n_D 1.64700

Tolerance: ± 2 units of the 5th decimal

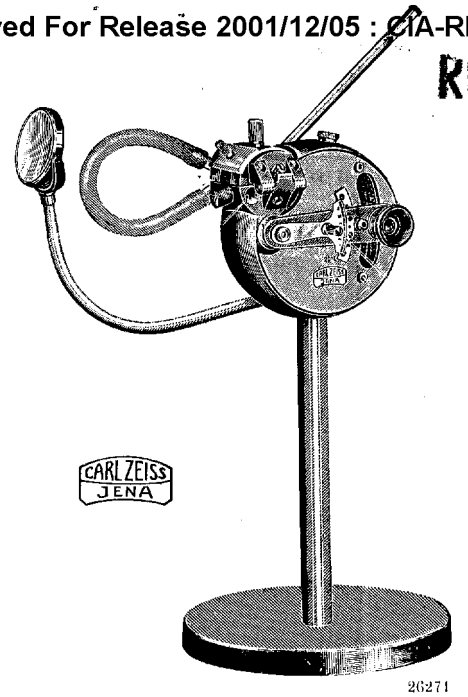
Dipping Refractometer:
Equipment for analytical laboratories
with temperature regulating device C

Order number	Code word
32 01 00	*Ujufa*

For particulars cf. pamphlet "Mess 32-130-1"

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2
RESTRICTED



26271

Refractometer for Sugar and Oil Industries

Fig. 14
(about $^1/_5$th actual size)

The most popular instrument in professional quarters for the rapid determination of dry solids and examination of the initial and final products in

Sugar, Canning and Jam Industries

Measuring range: percentage of solids 0 to 95 %
refractive index n_D = 1.330 to n_D = 1.540

Tolerance: solids ± 0.1 to 0.2 %
refractive index ± 1 to 2 units of the 4th decimal

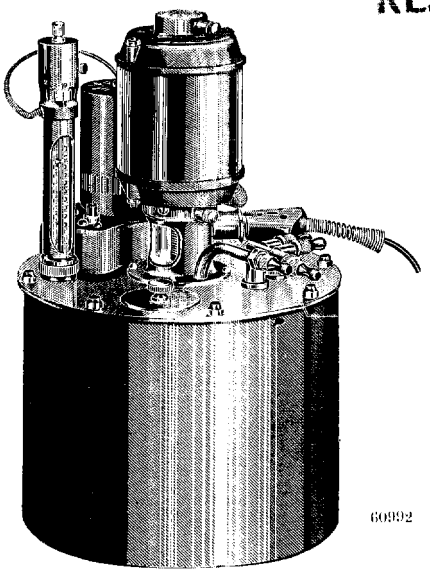
Refractometer for the Sugar and Oil Industries
with thermometer 0 to 50° c., in wooden box

Order number	Code word
30 02 50	*Uctix*

For particulars cf. pamphlet "Mess 32-140-1"

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2
RESTRICTED

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2



60992

Fig. 15 (about 1/6 actual size)

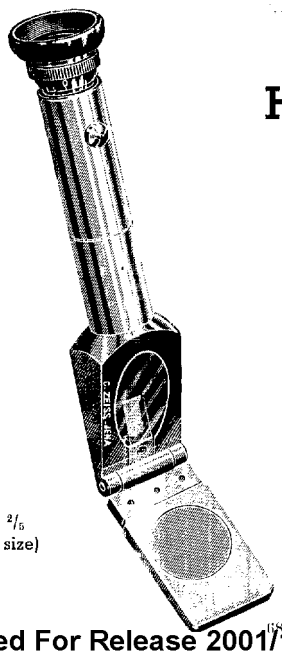
Ultra Thermostat

(Hoeppler type)

The maintenance of uniform temperature is a prerequisite for obtaining reliable refractometer readings. Meeting this condition the Ultra Thermostat of the Hoeppler type renders excellent service in the various branches of research. It automatically maintains the temperature at ± 0.02° C. for a range between —60° to +250° C.

Ultra Thermostat
(Hoeppler type)
with electro-thermometer
0 -100° C. operating on
220 V. a. c.

Order number	Code word
32 87 05	*Uhxka*



6870

Fig. 16
(about 2/5
actual size)

Hand Refractometer 0/30

A neat and very handy instrument rendering useful service in the determination of the percentage of solids within a range from 0 to 30% when testing fruit pulp in the jam production as well as when ascertaining the degree of ripeness in sugar beet, fruit and grapes.

Tolerance: ± 0.2 %

Hand Refractometer 0/30
Equipment for beet sugar,
in case

Order number	Code word
32 01 50	*Ucruk*

For particulars cf. pamphlet "Mess 32-145-1"

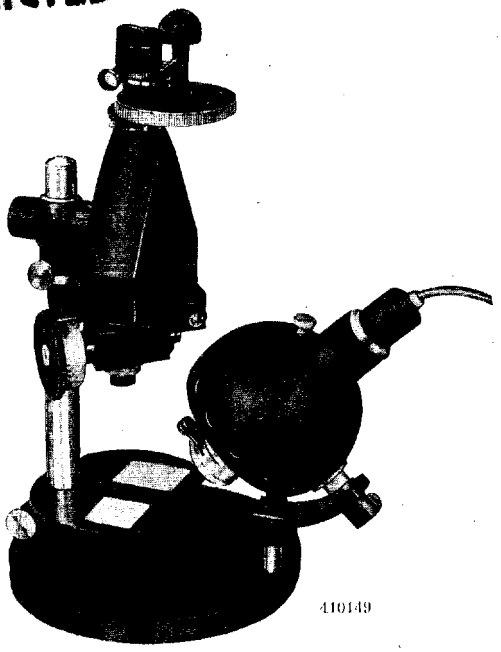
Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED

Pulfrich Photometer

(Equipment Iα/1)



410149

Fig. 17 (about 1/5 actual size)

for the measurement of reflection and transmission factors of solids, semi-solids, powders and of transparent materials used in

Paper, Cellulose and Chemical Industries and Laboratories as well as in the production of photo-chemical papers (determination of density).

	Order number	Code word
Pulfrich Photometer, Equipment Ia/1 for reflection and transmission measurements of solid and semi-solid substances, operating on 220 V. alternating current	32 50 00	*Ukupl*
Supplementary 1 to Ia/1 for density measurements of photo-chemical papers	32 50 03	*Ukunj*
Supplementary 2 to Ia/1 for absorption measurements of transparent and translucent solids	32 50 05	*Ukufb*

For particulars cf. pamphlet "Mess 32-535-1"

RESTRICTED

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

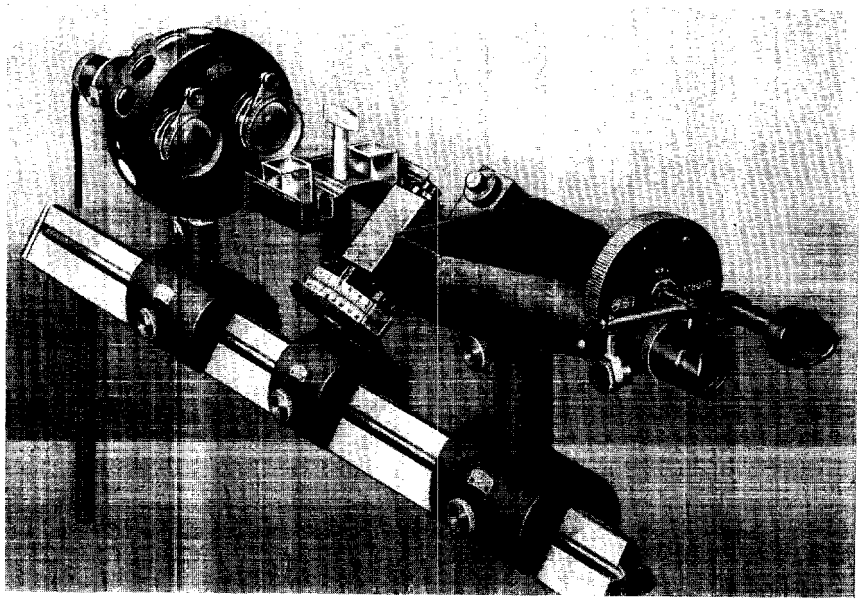


Fig. 18 (about $^1/_5$ actual size) 320018

Pulfrich Photometer (Equipment Ib/15)

for colorimetric determinations and absorption measurements of liquids in white and monochromatic light.

This equipment is used by:

Chemical and Chemico-biological Laboratories, Clinical Laboratories, Chemico-agricultural Institutes and Food Control Offices

for the colorimetric measuring of concentrations of physiologically important substances contained in blood, urine and liquor, as well as for the determination of vitamins, and in the testing of drinking water.

It is furthermore being employed by:

Metallurgical Laboratories, Chemical Works and Dye Plants, Water Works, Sugar and Oil Refineries, Mills and Breweries

for the colorimetric determination of the concentration of certain ingredients of the raw materials and final products, including purity tests of dyes, ascertaining the bleaching power of fuller's earths, and for water analysis, etc.

Pulfrich Photometer, Equipment Ib/15
for measuring normally absorbing liquids in white light, operating on 220 V. a. c.

Supplementary 1 to Ib/15
for measurements in monochromatic light

Order number	Code word
32 50 10	*Ukign*
32 50 12	*Uktur*

For particulars cf. pamphlet "32-515-1"

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED

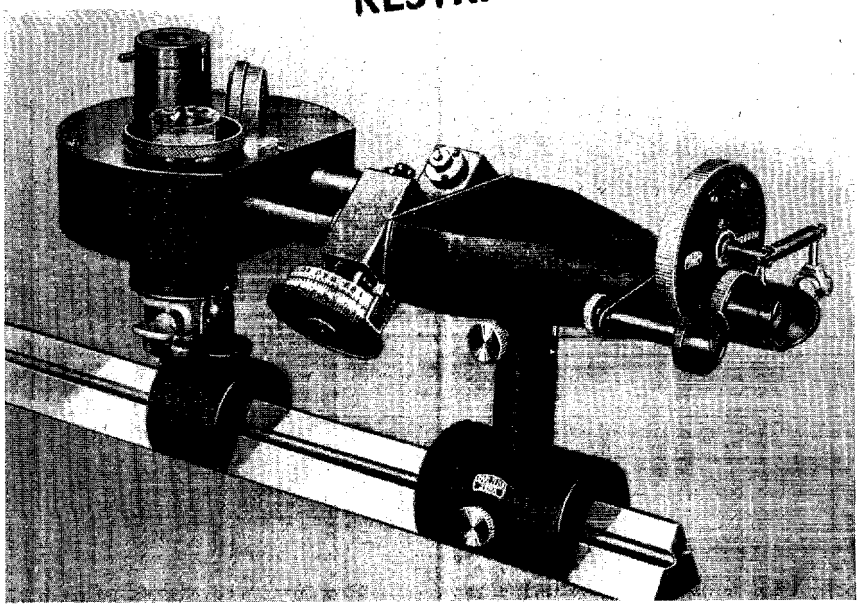


Fig. 19 (about 1/5 actual size) 320019

Pulfrich Photometer (Equipment III b/4)

for both turbidity and fluorescence measurements

Fitted with the corresponding supplementary attachment this equipment is used by

Chemical, Physico-chemical and Biological Institutes,
Serological Laboratories and Research Institutes,
Clinical and Pharmaceutical Institutes,
Water Testing and Food Control Offices
Industrial Research Laboratories

for:
nephelometric determinations of colloid sols (emulsions and suspensions) and ferments, continous observation and measurement of reactions of turbidity and precipitation in medicine and chemistry, fluorometric determination of concentrations and fluorescence measurements of liquids.

Pulfrich Photometer, Equipment III b/4
for the measurement of turbid and fluorescent substances in transmitted light, operating on 220 V. a. c.

Order number	Code word
32 50 31	*Ukuok*

Apply for particulars

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED

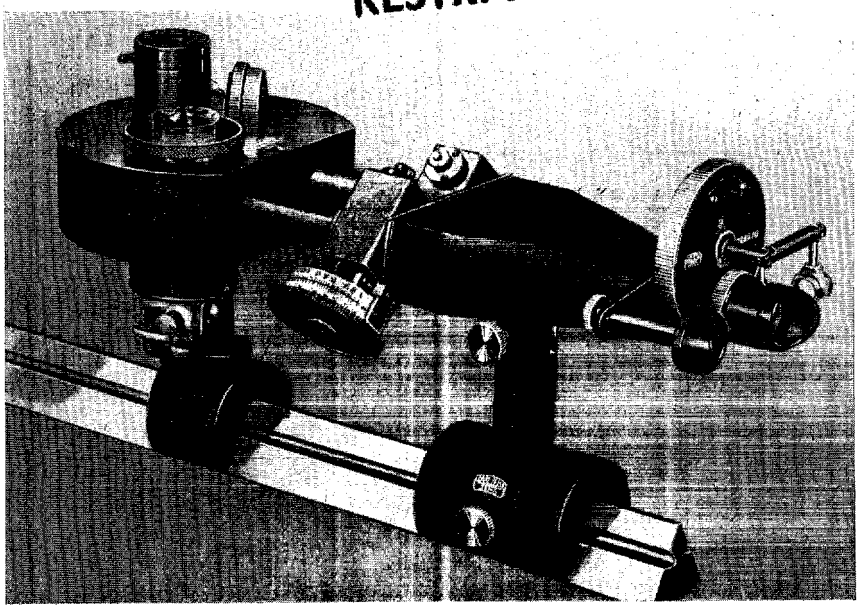


Fig. 19 (about 1/5 actual size) 320019

Pulfrich Photometer (Equipment III b/4)

for both turbidity and fluorescence measurements

Fitted with the corresponding supplementary attachment this equipment is used by

Chemical, Physico-chemical and Biological Institutes,
Serological Laboratories and Research Institutes,
Clinical and Pharmaceutical Institutes,
Water Testing and Food Control Offices
Industrial Research Laboratories

for:
nephelometric determinations of colloid sols (emulsions and suspensions) and ferments, continous observation and measurement of reactions of turbidity and precipitation in medicine and chemistry, fluorometric determination of concentrations and fluorescence measurements of liquids.

Pulfrich Photometer, Equipment III b/4
for the measurement of turbid and fluorescent substances in transmitted light, operating on 220 V. a. c.

Order number	Code word
32 50 31	*Ukuok*

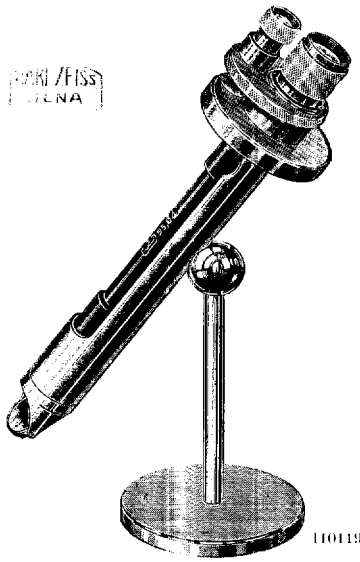
Apply for particulars

RESTRICTED

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RESTRICTED



110119

Fig. 20 (about 2/3th actual size)

Pocket Polarimeter

For the quantitative determination of sugar and albumen in urine. Its construction and handiness are specifically suited for the requirements of the practising physician as well as clinics and hospitals.

Tolerance: ± 0.05° 0.1 %

Order number	Code word
32 65 00	*Uhyth*

Pocket Polarimeter
with observation tube 95.04 mm. in wooden case

For particulars cf. booklet "32-575-1"

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

RELEASED

MICROFILMED

ZEISS

OPTICAL INSTRUMENTS

Microscopes · Photomicrographic Equipment · Projection Apparatus

Medico-optical Equipment · Ophthalmological Instruments · Magnifiers · Illuminants for Operating Theatres

Refractometers · Polarimeters · Photometers · Abbe Comparator

Surveying Instruments

Photographic Lenses · Slide Projectors · Portable Sound-Film Aggregates

Binoculars · Opera Glasses

Fine-Measuring and Precision Tools and Instruments for Engineering and Industrial Purposes

Astronomical Instruments

Punktal and Umbral Spectacle Lenses · Contact Lenses · Telescopic Spectacles

CARL ZEISS
JENA

(0.21) XII. 49 — Roo 56982
Printed in Germany

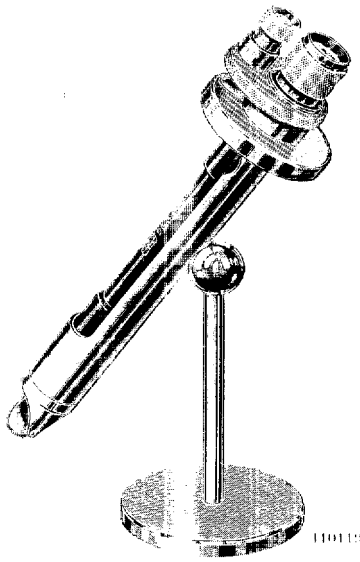
Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Please refer overleaf for a review
of our manufacturing range.

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2



Pocket Polarimeter

110119 Fig. 20 (about [illegible]th actual size)

For the quantitative determination of sugar and albumen in urine. Its construction and handiness are specifically suited for the requirements of the practising physician as well as clinics and hospitals.

Tolerance: 0.05% 0.1 %

	Order number	Code word
Pocket Polarimeter with observation tube 95.04 mm. in wooden case	32 65 00	*Uhyth*

For particulars see booklet "32-[illegible]-1"

Approved For Release 2001/12/05 : CIA-RDP83-00415R006200110008-2